# APPENDIX A – SUBPART 1

# PDT MEETING MINUTES

# COASTAL PLANNING & ENGINEERING, INC.

2481 N.W. BOCA RATON BOULEVARD, BOCA RATON, FL 33431
(561) 391-8102 Fx: (561) 391-9116

Internet: http://www.coastalplanning.net

E-mail: cmiller@coastalplanning.net


# MEETING NOTES

**Meeting Purpose:** Bogue Inlet Channel Relocation Public Forum Meeting
**Date:** May 29, 2002
**Location:** Emerald Isle, North Carolina
**Time:** 12:30 pm to 3:45 pm
**Commission Number:** 4500.00
**Report Prepared By:** Cheryl Miller
**Attendees:** Art Schools (EI Mayor), Frank Rush (EI Town Manager), Emily Farmer (EI Commissioner), Pat McElraft (EI Commissioner), John Dorney (NCDWQ), Tere Barrett (NCDCM), Joanne Steenhuis (NCDENIZ-WQ), Keith Harris (Corps), Larry Calame (Corps), Mickey Sugg (Corps), David Allen (NCWRC), Tracy Rice (USFWS), John Ellis (USFWS), Ron Sechler (NMFS, HCD), Ted Tyndall (NCDCM), Bennett Wynne (NCWRC), Nicole Mihnovets (NCWRC), Tom Jarrett (CPE), Cheryl Miller (CPE)

The following issues were discussed during the meeting. Written agency comments are to be provided to the Corps and Town by June 30, 2002.

**Comments/Discussion by Regulatory Agency Representatives**

Mickey Sugg (Corps)- Is the proposed channel relocation a temporary or permanent fix? Channel design must be adequate to assume major flow through inlet. Amount of beach nourishment material needed should not dictate channel dimensions.

(Town)- Currently in the process of amending the Bogue Banks beach nourishment permit to address the use of a hydraulic dredge

Tracy Rice (USFWS) - Reiterated that use of a hydraulic dredge for the Bogue Banks nourishment project would reduce the likelihood of sea turtle take

Tom Jarrett (CPE) - likelihood of sea turtle take during proposed channel relocation would be very low, ebb shoal not likely habitat for sea turtles, proposed project would employ hydraulic dredge

Tom Jarrett (CPE) - adjacent marsh habitats- review of historic aerial photography suggests that flood tide delta protects adjacent Dudley Island- no matter what the position of the channel

NCDWQ/DCM - Noticed that when the channel is more centrally located (like Y) - the flow to adjacent estuarine habitats is more open. Questioned the tidal stage of the aerial photos because tidal stage would influence the perception of the shoal position

Corps- Emphasized adequate alternatives analysis and examination of the no-action alternative (i.e. where will the channel end up? How far east will it move? Will it migrate back west?) Examine conditions under different channel positions versus no-action alternative.

Several questions concerning fill deposition within 1.5 miles of the Pointe – what about 100,000 cubic yards? Town representatives stated that previous fill of 60,000 CY lasted two weeks. Is there a need to plug old channel?

NCWRC- Island 2 is state-owned land, serves as valuable bird nesting habitat, proposed project design must avoid Island 2

Melba McGee- contact for NC State review, NC State Clearinghouse

Corps- proposed project involves alteration of Federal navigational channel. Corps has determined that NEPA EIS will be required

NCWRC- FMP for several fish and invertebrates [blue crab (crab sanctuary), mullet, red drum, summer flounder, spotted sea trout, peneaid shrimp]. EIS must address EFH and NC state agency concerns

USFWS- Cited example of inlet macroinfaunal study in South Carolina but no adequate baseline data set exists for Bogue Inlet. Requested seasonal sampling of macroinfauna for at least one year prior to project. Sampling can occur concurrently with EIS document development. Draft biological monitoring plan must be submitted to agencies for review and approval.

General discussion issues

Geomorphic analysis- How do differences in the shape of the shoals provide for different habitat types? Are there seasonal differences in the amount of habitat type based upon shoal size?

Bogue Inlet- one of top 3 bird habitat inlets in North Carolina, spit habitat for piping plover

If there is accretion- who owns the land? Can it be redeveloped? Can the Town acquire land at the north end? State already owns land at the north end

Corps must initiate Section 7 consultation with USFWS/NMFS

Effects upon commercial fisheries/navigational channel?

N.C. Archives of History- magnetometer survey of the inlet

Hammocks Beach State Park concerns- Island 2, Bear Island erosion concerns- loss of habitat for least terns, black skimmers, other shorebirds, Increased sedimentation in Cow Channel
Requested mitigation for any potential negative impacts

Estuarine environments- analysis of constancy based upon swinging of inlet position- important for EIS

**Public/Interested Party Comments**

Orrin Pilkey- discouraged the use of ebb tidal shoal sand for beach fill- stealing sand from the Bogue Banks system
Stated that the search for beach nourishment sources must go offshore- do not mine tidal delta. If anything- Pilkey prefers use of flood shoal rather than ebb shoal
Cited Shallotte Inlet project- increased erosion on Holden Beach
Recommended panel of out-of-state scientists for consultation regarding use of tidal delta sediments for beach nourishment

Public comment- The no-action alternative is not really "no-action" because the existing condition does not leave inlet dynamics to mother nature due to Corps maintenance dredging. If no action is taken, Town residents estimate the loss of approximately 100 homes on the Pointe.

Jim Stevenson- NC Coastal Federation
Questioned if the meeting was considered the scoping meeting under the NEPA process? Advocated requirement of NEPA EIS and statutory scoping meeting. Corps representatives confirmed that this meeting would not be considered the NEPA scoping meeting.
Emphasized that obtaining sand for placement upon the beach should be the by-product of this project- not a primary purpose. Stated that NC CAMA rules for development do not appear consistent with the proposed project- State rules do not allow manipulation of inlet hazard areas, public access issues
Believes that the proposed 600 foot width for new channel is much too wide
Emphasized the need for mitigation for adverse impact to flood tide delta and adjacent habitats.

# Minutes of February 4, 2003 Meeting of the
## Bogue Inlet Project Delivery Team

1. **Mickey Sugg** stated that the primary purpose of the meeting was to discuss the full range of possible alternatives. The alternatives should be reasonable in terms of technology and economics and must be evaluated for their impacts on the environment and economy. Ultimately, the EIS process will define a preferred alternative.

2. **Mickey** opened the discussion with the no-action alternative. He mentioned two possibilities, one without sandbags and one with sandbags. For the without sandbag case, the inlet shoreline would continue to migrate to the east at some historical rate for some period of time. **Tom Jarrett** mentioned that a reanalysis of the inlet shoreline history resulted in a range of possible shoreline change rates of 60 ft/yr, 75 ft/year, and 90 ft/yr. All three of these rates are based on measured changes in the inlet shoreline between 1984 and 2001. Since the existing sandbags have essentially reached the end of their permitted life, the existing bags would be removed at the beginning of the analysis. The without sandbag alternative assumes that the shoreline will continue to migrate to the east for 10 years. There was some discussion as to whether or not the 10-year period for continued erosion is reasonable. To address this, the analysis is being done in 2-year increments in order to determine when the damages and economic impacts associated with continued erosion of the inlet shoreline equals the costs for the channel relocation project.

3. For the with sandbag case, **Jarrett** indicated that the sandbags are assumed to remain in place for a period of 2 years, as allowed by State of NC rules. Once their 2-year life is over, the bags would be removed and the shoreline would again migrate to the east until it threatens the next line of houses. At that time, a new row of sandbags would be installed and again would remain in place for 2 years. Over the 10-year analysis period, three sets of sandbag revetments would be constructed. The end result of the sandbags would be to reduce the rate of erosion and the associated damages and economic losses by about 60%. **Jarrett** noted that all no-action alternatives would have to include the cost of nourishing the west end of Emerald Isle using an offshore sand source. Based on the contract cost for the east end of Emerald Isle, this cost would be around $4.5 to $5.0 million.

4. **John Kilgona** mentioned that he expects the existing sandbags to be gone within a year and that continued erosion of the inlet will lead to the reopening of the Coast Guard Channel. **Jarrett** stated that this looks like it could happen in 5 to 6 years, however John believes it will happen much sooner (2 to 3 years). In any event, the reopening of the Coast Guard Channel could lead to the deterioration of the existing sand spit since its source of sand would be cut off. The prediction is that the sand spit would become an overwash terrace, which would offer a completely different type of habitat compared to the sand spit.

5. While there are avenues available to possibly extend the life of each sandbag installation, there seemed to be general agreement that the 2-year life being used is reasonable.

6. **Charles Vincent** initiated a discussion on the use of hard structures to protect the Pointe shoreline. **John Kilgona** noted that the shorelines along the Coast Guard Channel had bulkheads and was wondering why they could not be extended to cover the inlet shoreline. **Jarrett** mentioned that State rules allow hard structures on estuarine shorelines but that the inlet shoreline is consider to be in the ocean hazard area where hard structures are prohibited. The discussion then turned to the possible stabilization of Bogue Inlet with jetties. Jetties would not only benefit the shoreline but would also improve the navigability of the inlet. Mickey raised the issue regard the purpose of the project, was it for navigation or shoreline protection. **Frank Rush** and **Mayor Schools** stated that the primary purpose of the project was to protect the Pointe shoreline with the secondary benefit of providing high quality beach nourishment material for the west end of the town.

7. **John Kilgona's** main concern over the project is that it will probably have to be repeated again in the near future and that some long-term solution needs to be worked out that will prevent the town from having to assess additional taxes for future channel relocation projects. He highly favors some kind of combined project that will benefit both navigation and the shoreline through proper management of the sand resources in the inlet. **Glenn McIntosh** said that the Corps will be looking at Bogue Inlet as a source of sand for the long-term protection of Bogue Banks. **Jarrett** suggested that any consideration for using Bogue Inlet as a long-term source of beach sand should focus only on the channel corridor as mining the outer sections of the ebb tide delta could be risky. The existing inlet is not an efficient mover of sand as evidence by the excess of material on the west end of Bogue Banks and the deficit on Bear Island.

8. **Jarrett** talked about the existing authorities that the Corps has, one for storm protection and one for navigation and that the benefits for one can't be used to justify the other. In that regard, **Jarrett** suggested that if there is interest in improving the navigability of Bogue Inlet, efforts should be made to get a Corps study authorized to look at the inlet for navigation improvements. However, as **Glenn McIntosh** pointed out, the Corps O&M budget is shrinking and the likelihood of new small craft navigation projects receiving favorable consideration is rather remote. If the Corps is looking at Bogue Inlet as a source of sand for the long-term protection of Bogue Banks, perhaps the cost of providing navigation improvements would be rather low if the inlet is used as a continuing source of beach nourishment. At this time, however, the timeline associated with the Corps beach protection study would not mesh with a future study of the inlet for navigation improvements.

9. Returning to the hard structure issue, **Mickey** asked how big of a structure should be considered and what would be the biological and economic impacts. Also, he asked if the structure would deprive Bear Island of sediment. **Jarrett** mentioned that any consideration of a hard structure would be a waste of time and money given the State rules. **Harry Simmons** said, that although he would not necessarily favor this, you could go through the variance process to try and get approval for a hard structure. While one could certainly make an appeal to the CRC for a variance, the process takes several years and the chance of obtaining a variance would be small. Agreement was reached that a terminal groin or similar structure would be included in the discussion of alternatives but will not be considered a reasonable alternative. Also, the type of structure required to only protect the Pointe shoreline would not have any beneficial impact on navigation in Bogue Inlet. **Mickey** pointed out that this needs to be stated in the EIS.

10. **Todd Miller** asked the question regarding gains and losses of sand for the alternatives. He mentioned the erosion of the ocean shoreline on the west end of Emerald Isle that is predicted to occur with the channel relocation project. **Jarrett** indicated that a diagram will be prepared to show where material is likely to be lost and where it probably accumulates. **Jarrett** mentioned that around 1.5 million cubic yards would be eroded from the west end of Emerald Isle following the channel relocation *(actually the volume is more like 2.1 million cubic yards).* Approximately 1 million cubic yards would be required to fill the seaward portion of the existing channel. Once the channel is repositioned, the ebb tide delta will assume a new configuration, which in turn will involve the redistribution of sediment.

11. **Jarrett** stated that the volume of material required to fill the existing channel would be the same with or without a dike closure of the existing channel. In this regard, construction of a sand dike across the existing channel would take around 200,000 cubic yards. Construction of the sand dike would accelerate the rate of filling of the seaward portions of the existing channel.

12. In the December meeting, **Todd Miller** raised the concern over the transport of fines into the sound during the construction of the dike. **Jarrett** indicated that the jet probes and vibracores found only 1.5% silt or less, however, estimates will be made as to how far into the sound the fines could be carried during the construction of the dike.

13. A question was raised regarding the expected life of the channel relocation project. That is, how long would the channel remain in a position that it does not again threaten the Pointe. **Jarrett** stated that a project life has not been established and predicting such would be very tricky given the historic erratic behavior of the channel. Since the new channel would be moved 3,000 ft to 3,500 feet to the west, it should take a while for the channel to again move next to the Pointe. **Jarrett** said that an attempt will be made to make such a prediction.

14. **Mickey Sugg** questioned if the beach nourishment project on the west end of Emerald Isle would have any impact on the movement of the inlet shoreline. **Jarrett** responded that the nourishment project would end about 1.5 miles east of the inlet and that it would not have any impact on sediment transport rates. **Jarrett** noted the excessively large volume of sand presently residing on the west end of Bogue Banks as a result of the present inlet configuration and that simply adding more material east of this area would not have an impact. **Mickey** indicated that a discussion along these lines should be included in the EIS.

15. There was general agreement that the channel relocation alternative will include several sub-alternatives covering a wide range of channel dimensions. The channel sub-alternatives will be used to establish the minimum size channel required to capture the majority of the flow through Bogue Inlet.

16. **Todd Miller** asked if reopening the Coast Guard Channel would cause the existing channel to move away from the Pointe shoreline. **Jarrett** stated that there were problems at the Pointe in the past when the Coast Guard Channel was open. The opening of the channel would lead to the deterioration of the sand spit as discussed previously. Due to its relatively small size, the volume of water flowing out of the Coast Guard Channel would probably not be great enough to force the ebb channel away from the Pointe. In any event, **Jarrett** said he would ask **Bill Cleary** to take a close look at the possible impact of the Coast Guard Channel and have him report his findings at the next PDT meeting. **Mickey Sugg** stated that he did not consider the Coast Guard Channel as a workable alternative. While the reopening of the Coast Guard Channel was not considered to be a feasible alternative, the EIS will include a discussion of the Coast Guard Channel.

17. There was some considerable discussion regarding the size of the repositioned channel. **Jarrett** indicated that the minimum depth under consideration is 12 feet mean low water (mlw) due to the operational constraints associated with ocean certified pipeline dredges. Also, these dredges generally have a minimum swing distance of 150 feet. **Jarrett** pointed out that as long as the channel is large enough to capture the flow, adjustments will occur that will tend to return the channel to depths and widths comparable to those of the existing channel. If the dredged channel is relatively small compared to the existing channel, this could lead to excessive scour as the channel adjust to the flow conditions. The scoured material could end up in the marshes or attach to existing sub-tidal shoals. Some of the material could obviously be transported seaward. If the channel is too big, shoaling could impact sediment budgets on the adjacent islands. While the goal is to limit the size of the channel, consideration of post-construction adjustments and the impacts that these adjustments will have is also a consideration. Obviously, the larger the channel the greater the direct impacts on the sub-tidal system. **Mickey** said that the EIS should cover the channel adjustments and the impacts of these adjustments.

18. The design of the channel is being based on a combination of factors including the numerical model, dimensions of the existing channel, and channel stability criteria.

19. Regarding the redistribution of sediment following the channel relocation, **Justin McCorclf** asked what was the level of certainty associated with the predictions. **Jarrett** responded that a range of possible shoreline changes on the west end of Emerald Isle will be presented based on the measured changes in shoreline position and the degree of accuracy of the measurements. Present estimates of the amount of time required for shoreline to adjust and existing channel to fill is around 8 to 10 years based on the rate of sand transport in the area. **Jarrett** noted that the rate of sand transport was based on a 20-year wave hindcast that included storms. However, if the area is impacted by a series of storms like those between 1996 and 1999, the time frame could be accelerated.

20. **Tracy Rice** wanted to know if different channel alignments would be considered. **Jarrett** responded saying that the preferred alignment was based on the work of **Bill Cleary** and that the selected alignment appeared to provide the least impact on Island 2 and Bear Island. **Bill** will be available at the next meeting to address this issue.

21. **Mickey** suggested that the EIS provide a full discussion of the possible range in channel size with discussion of the impacts of large and small channels. He suggested that a minimum channel and maximum channel be presented.

22. **Mickey** questioned if a sheet pile structure is still being considered for closure of the existing channel. **Jarrett** indicated that he had performed a cursory cost analysis of the sheet pile wall and found the cost would probably be prohibitive. Also, given the size characteristics of the material that would be used to close the channel, the dredge should be able to accomplish the closure in 4 to 5 days by simply pumping material directly into it. There was some discussion as to whether there would be any ecological benefits associated with the sheet pile wall, but there was no general consensus.

23. With regard to the need for the dike, **Ron Sechler** favored an alternative that would hasten the recovery of the inter-tidal habitat. He believes that closure of the existing channel would lead to the more rapid development of the sand spit and the infilling of the existing channel, thus restoring sub-tidal habitat loss as a result of the channel dredging. As far as the dike construction was concern, **Ron** suggested beginning on the Emerald Isle side with material being discharged directly into the channel in such a manner that the material does not flow back across the sand spit.

24. **Todd Miller** wanted to know the sequence of events and if there would be enough material to close the existing channel. **Jarrett** explained that construction would

progress from the ocean toward the sound with this material being pumped to the ocean shoreline. Once the new channel reaches the landward end of the existing channel, material would be pumped to close the existing channel. Based on quantity estimates, there is enough material in the landward end of the channel to close the existing channel. There was additional discussion of previous inlet/channel closures including St. Simon Sound *(correction, it was Port Royal Sound/Hilton Head Island)* in South Carolina, a breach in Folly Beach caused by Hurricane Hugo, Buxton Inlet opened by the Ash Wednesday Storm of 1962, and the Hurricane Hazel breach through Long Beach (Oak Island).

25. **Mickey** asked how high the dike would be. **Jarrett** said the crest elevation would be at +6 ft NGVD but that this could be lower to possibly 4 ft NGVD to match elevations on the existing sand spit. **Tracy Rice** expressed some concern on the crest elevation of the dike. *(Note: The final crest elevation can be lowered once the channel is closed.).*

26. **Todd Miller** asked the sand spit would buildup and if the sand spit would have any dunes. The sand spit would form from material moving off the west end of Emerald Isle and from the collapsing ebb tide delta off the west end of Emerald Isle. The sand would move into the inlet and eventually weld to the sand dike. There are no plans to construct dunes on the sand spit. If dunes form naturally, the volume of sand they would hold would be relatively minor and would not have an impact on the overall sand budget of the area.

27. There was some discussion on the possibility of stockpiling material for use in closing the existing channel similar to what was done for Mason Inlet. The discussion focused on stockpiling material on the existing sand spit or perhaps on the inter-tidal shoal between the new channel and the existing channel. There was general agreement that this approach was not practicable.

28. Concerns were raised over ownership of the new land that would be created as a result of the project, namely, the new sand spit. Since this is a legal question, the Town of Emerald Isle agreed to look into the issue. Several points of contact were mentioned including Joe Kalo (NCSU), Joe Henderson, and Robin Smith.

29. **Tracy Rice** suggested that certain contingencies needed to be developed and included in the EIS. The contingencies should include nourishment of Bear Island, response to impacts to Dudley Island, erosion of the oceanfront on the west end of Emerald Isle, and dredging to reposition the channel.

30. **Tracy** also suggested that the no-action alternatives should include relocation of homes with habitat restoration of the abandoned lots.

31. **Mickey** has scheduled the next PDT meeting for 10:00 am on February 19 at the Emerald Isle Town Hall. The agenda will include:

a. Presentation by **Cleary** on the Geomorphic Analysis of the Inlet

b. **Dave Rabon**, FWS, to discuss endangered species, biological assessment, and essential fish habitat.

c. **Erin Haight**, CPE, Summarize data collected and discuss potential impacts on benthic communities and salt marshes.

d. General discussion on the environmental impacts of the proposed project.

32. **Frank Rush** wanted to know what the timeline is for the EIS and if the January 2004 construction start date was still good. Indications are that January 2004 may be out of reach. **Jarrett** will put together a new timeline and provide to the Town.

33. **Todd Miller** asked if Town will go forward with nourishment of west end using offshore sand source if inlet project not permitted in time to perform work in January 2004. Frank stated it would be his recommendation to wait until the inlet project is permitted. He believes that the condition on the west end of Emerald Isle is not so critical that it could not wait another year. However, the decision will be up to the Town Board. **Jarrett** asked **Chris Freeman** to look at his shoreline data and provide the town with some update on the recent behavior of its shoreline.

34. Another meeting of the PDT was scheduled for March 12th. **Mickey** asked the participants to email him if any additional thoughts come to mind after the meeting.

35. The meeting was adjourned at around 12:30 pm.

List of Participants

February 4, 2003 Bogue Inlet PDT Meeting

| Name | Representing | Phone Number |
|---|---|---|
| Tom Jarrett | CPE-NC | 910-392-0453 |
| Mike Marshall | NC DMF | 252-726-7021 |
| Harry Simmons | NC Shore & Beach | 910-200-7867 |
| Tracy Rice | USFWS | 919-856-4520 ext 12 |
| Todd Miller | NC Coastal Federation | 252-393-8185 |
| John Fussell | | 252-240-1046 |
| Glenn McIntosh | USACE | 910-251-4621 |
| Justin McCorcle | USACE | 910-251-4699 |
| Mickey Sugg | USACE | 910-251-4811 |
| Chris Freeman | UNC-CH | 252-726-6841 ext 145 |
| Dave McHenry | NC Wildlife Resources Comm. | 252-946-6481 ext 345 |
| Brian Strong | NC State Parks | 919-715-8711 |
| Charles R. Vincent | Bogue Banks Beach Preservation | 252-354-2501 |
| Art Schools | Mayor Emerald Isle | 252-354-3424 |
| Frank Rush | Town Manager Emerald Isle | 252-354-3424 |
| Jane M. Koroly | Cedar Point | |
| W.B. Ennett | Cedar Point | 252-393-8123 |
| James Phillips | Swansboro | 252-326-5401 |
| John Kilgona | Emerald Isle | 252-354-7084 |
| Wendy Cluse | NC Wildlife Resources Comm. | 252-725-5328 |
| Nicole Mehnovets | NC Wildlife Resources Comm. | 252-247-9453 |
| Greg “Rudi” Rudolph | Carteret County | 252-393-2663 |
| Ron Sechler | NMFS-HCD | 252-728-5090 |
| Noelle M. Lutheran | NC DWQ | 910-395-3900 |
| Michelle Duval | Enviro. Defense Fund | |

# Minutes of February 19, 2003 Meeting of the
## Bogue Inlet Project Delivery Team

1. **Mickey:** The agenda for the meeting included (a) **David Rabon**, FWS, discussion of endangered species consultation and the biological assessment, (b) Essential Fish Habitat consultation, (c) Discussion of resources and data collected to date, (d) Discussion by resources agencies of what information they have on the resources, (e) some discussion of the monitoring plans, and (f) presentation by **Bill Cleary**, UNCW, on the geomorphic analysis of Bogue Inlet.

2. In response to a question by **Rudi Rudolph** concerning alternatives, **Mickey** indicated that he would compile a list of alternatives and provide the list to the PDT. The list of alternatives includes a broad range of possibilities including the channel relocation.

3. **Frank Rush** indicated that the Town of Emerald Isle had formally requested that no detailed consideration be given to the use of hard structures. **Jarrett** indicated that options involving hard structures have been written off and will only be mentioned in the final EIS and will not be covered in any detail.

4. **Bill Cleary**, UNCW, provided a detailed presentation of the studies he has made of changes in the inlet. The study included an overview of changes since 1938 but concentrated on changes since 1973. Thirteen sets of aerial photographs were used in the detailed analysis with measurements being made to determine changes in: (a) the channel position and orientation, (b) inlet width, (c) Bear Island and Emerald Isle inlet shorelines, (d) ocean shoreline positions for a distance of about 7,500 feet from the inlet, (e) ebb tide delta configuration, (f) Dudley Island, (g) and Islands 1 and 2.

5. **Cleary** noted 3 phases in the inlet's evolution since 1973. From 1973 to 1981, the channel was repositioned to a point midway between the two islands and actually migrated slightly to the west during this period. From 1981 to 1986, the channel began to move to the east and a large marginal flood channel developed west of the channel. This led to the development and build-up of the large middle ground shoal between the channel and Bear Island. The final period extends from 1986 to 2001 during which time the channel has migrated to the east at an average rate of around 93 feet/year. He noted that the Coast Guard Channel did not have any significant impact on the behavior of the inlet or the location of the ebb channel.

6. **Todd Miller** asked if looking back to 1938 would make any difference on the inlet migration tendencies. **Cleary** demonstrated that the channel was well to the west, next to Bear Island in 1938, and including inlet data back to that point in time would not change conclusions regarding the channel movement.

7. **Cleary** discussed changes in the inlet's minimum width indicating that the overall widening of the inlet since 1973 has been due to erosion of both the Bear Island and Emerald Isle inlet shorelines. The average rate of erosion of the Emerald Isle inlet shoreline since 1984 has been about 60 feet/year.

8. **Cleary** stated that the average changes in the oceanfront shoreline position close to the inlet averaged 10.6 feet of accretion/year on Emerald Isle and about 11.0 feet of erosion/year on Bear Island. As the channel migrated to the east, significant erosion has occurred on Bear Island and a large amount of accretion has occurred on Emerald Isle. These changes are also associated with the configuration of the ebb tide delta. As the apex of the delta shifts toward Emerald Isle, wave sheltering increases on Emerald Isle as does the onshore movement of swash bars. On the other hand, the east end of Bear Island is exposed to wave action with swash bars migrating into the middle ground shoal portion of the inlet, not the Bear Island shoreline. This has apparently contributed to the increased elevation of the middle ground shoal area.

9. **Cleary** explained that the movement of the inlet channel and the associated buildup of the Emerald Isle sand spit has resulted in the erosion of the east portion of Dudley Island. This erosion is the direct result of the spit forcing Eastern Channel to the north against Dudley Island.

10. **Cleary** pointed out that Islands 1 and 2 are ephemeral features that did not exist until the mid 1990's and may have been products of Hurricanes Fran and Bertha, which occurred in 1996. **Cleary** noticed that Island 2 has apparently migrated to the west approximately 1,000 feet between 2001 and the latest photo taken in 2002. **Mickey** asked how long would it take for Island 2 to migrate out of the area to which **Cleary** responded that he couldn't say for sure, but the island will definitely disappear over time.

11. Based on his measurements and analysis, **Cleary** predicted the following changes as a result of the channel relocation project: (a) the east end of Bear Island would accrete and the west end of Emerald Isle would erode. The amount of accretion on Bear Island would vary from around 500 feet near the inlet to 70 feet near the midpoint of the island. Erosion on Emerald Isle will range from 60 feet at a point 5,000 feet or so from the inlet to around 410 feet close to the inlet. (b) The Emerald Isle spit should not be significantly impacted and should stop growing as a result of material being prevented from moving down the existing channel. This should benefit Dudley Island, as Eastern Channel would no longer be forced up against the island.

12. There was a question on location of the present inlet hazard area, however, **Cleary** pointed out that he disagrees with the current definition, as it does not adequately take into account the area actually influenced by changes in the inlet. The old hazard area was based primarily on inlet migration whereas the actual area of influence can extend well beyond the historic inlet location.

13. **Ed Murphrey** asked what historic inlet configuration was the most efficient. **Cleary** indicated that returning to a previous inlet condition would not be possible due to restriction on dredging that would be needed to remove accumulated sediment from some of the connecting channels. He pointed out that this was a weakness in the Mason Inlet project where dredging of Banks Channel behind Figure 8 Island was not allowed.

14. **John Wells** initiated a discussion concerning the increase in the amount of material that has apparently been stored in the inlet since 1973. **Cleary** said that he cannot determine this without historic hydrographic surveys. **Jarrett** suggested using inlet surface area as a proxy but noted that this would not be a very reliable measure of shoal volume. **Cleary** did indicate that inlet sediment volume has apparently increased and is one of the factors driving the channel to the east. **Cleary** concluded that inlets are a sediment sink and with existing restrictions on dredging, will continue to lose beach sediment to the inlet.

15. **Frank Rush** asked **Cleary** to give his opinion on whether the side cast dredging has affected the inlet. After some discussion on the side cast dredge operation and observations of past inlet changes that occurred in the absence of side cast dredging, **Cleary** concluded that the dredging activity had very little if any impact.

16. **Rudi** raised a question concerning the length of time required for the oceanfront shoreline adjustments to occur. **Cleary** indicated that adjustments would take some time. **Jarrett** provided an estimate of 2 years for bar material to adjust followed by 4 years for beach material to move to the west. Total adjustment period around 6 years. These are times if existing channel closed. If channel not closed, adjustment period could be as long as 10 years. In other words, shoreline adjustments will occur relatively slow not in one year.

17. **Ed Murphrey** asked if a deeper ebb channel would affect depths in other parts of the inlet. **Jarrett** said that total cross-sectional area of the inlet will remain about the same so as one channel gets deeper or is made deeper other inlet channels may shoal.

18. **Todd Miller** asked a question regarding the inlet width and if **Cleary** could provide his assessment of what will happen to the Emerald Isle inlet shoreline. **Cleary** indicated that, due to the buildup of material on the middle ground shoal area of the inlet, it would take a rather large storm event to breach the shoal. If the sandbags are removed from the Emerald Isle shoreline, the inlet shoreline would continue to erode.

19. **Todd Miller** asked if increases in shoal elevation will result in Bear Island migrating to the east? **Cleary** said he expects the same trend to continue with expansion of the inlet throat and erosion of the Bear Island spit.

20. **Todd Miller** initiated a discussion of the residual protection that would be provided following the shoreline adjustments on Emerald Isle. Would the remaining dune system provide protection to the existing development? **Jarrett** indicated that an assessment will be made of the protective value of the adjusted profile to determine the level of protection that will remain following the predicted shoreline changes.

21. **Ed Murphrey** asked if channel not moved will Dudley Island continue to erode. **Cleary** said yes, that the spit is a major player. **Mickey** asked if the spit will still be a major player if channel relocated. **Cleary** responded that nourishment of spit would be cut off with closure of existing channel, therefore, he would expect spit not to continue to

grow. **Ed** also asked if spit could be used for beach nourishment but **Cleary** pointed out that environmental constraints would not allow this.

22. **Frank Rush** asked **Cleary** to provide his estimate of where the inlet shoreline would end up if the bags are removed. **Cleary** said probably 800 feet or more to the east and could be greater if rate increased. This could be affected by changes in the channel orientation. If the inlet channel movement is accompanied by a swing in the channel orientation toward Emerald Isle, additional areas east of the inlet could be impacted.

23. **John Wells** asked how changes have been affected by storms. **Cleary** said he did not see much influence of storms in his data. Storms could have an impact on Islands 1 and 2. **Jarrett** pointed out that the major shift in channel position that occurred between 1981 and 1984 was not due to storms.

24. **Cleary** responded to some questions regarding the Mason Inlet project. While he was not directly involved in the project, he had suggested that the connecting channels, particularly Banks Channel behind Figure 8 Island, be cleaned out to improve circulation and flow. This was not allowed and in his opinion, this was a major flaw in the project and will result in future problems.

25. **Mickey** asked if removing sand from the inlet and depositing it 5 miles away will have an impact on the inlet? This was followed by a discussion of the overall sediment redistribution in the inlet associated with the channel relocation project. First, **Jarrett** provided his estimates of the suspended sediment plumes that would be created during the construction of the closure dike. Based on concentration of silt in the ebb tide delta material, pumping rates from the dredge, and flows through the inlet channel, the sediment plume would extend approximately 3,500 feet into the sound from the dike location and 4,500 feet seaward of the dike. Concentrations of suspended sediment on the sound side would be around 6 ppm while ocean side concentrations would be around 4 ppm. Since there is no way to convert suspended sediment concentrations to NTU's (turbidity measurement) cannot predict what turbidity levels would be but appears there would not be a problem with meeting the State 25 NTU standard. **Erin Haight** pointed out that an NTU of 25 looks like chocolate milk. Construction of the dike would require 200,000 cubic yards and could be accomplished in 9 to 10 days or perhaps less if dredge production rate exceeds the assumed 900-cy/hr rate used in the estimate. **Jarrett** noted that production rates for ocean certified dredges can reach 1,500 cy/yr. The crest elevation of the dike would be +4.5 feet NGVD or about the elevation of the existing spit.

26. With regard to the overall sediment redistribution, construction of the channel would remove around 1 million cy, 200,000 cy would be used to construct the dike, 1.5 million cy would be redistributed from the existing ebb tide delta off Emerald Isle to shoal the existing channel and weld to the beach, 565,000 cy would erode off the west end of Emerald Isle and move into the inlet as a recurved spit, channel scour associated with the flattening of the side slopes from 1V:5H to 1V:20H or 1V:50H would result in about 150,000 to 200,000 cy being transported seaward along the channel and 120,000 to 150,000 transported toward the sound, and there would be an overall reshaping of the ebb

tide delta that would result in some accumulation on the outer portions of the ebb tide delta west of the new channel. Material eroded to flatten the channel side slopes would be transported along the bottom of the channel as bed load. Transport into the sound would probably occur up to 6,000 feet from the inlet throat up Eastern Channel with some material possibly being deposited between Island 2 and Dudley Island. Uniform deposition of the scoured channel material would raise the bottom elevation by 0.25 foot. Uniform distribution will obviously not occur, therefore some areas could accrete as much as a foot. This raised the question regarding the potential impacts on channel maintenance dredging for which there is no definitive answer. Dredging records for the connecting channel are sparse and probably mixed in with the dredging reports for the inlet channel. Therefore, impacts on dredging will be difficult to determine and quantify.

27. In response to **Mickey's** original question on impacts of the sediment removal, the net change in the sediment in the inlet would be the difference between 800,000 cy or so used for beach nourishment and the 565,000 cy of beach material expected to be transported into the inlet. In terms of the overall impact, the volume difference is probably less than 1% of the sand presently in the inlet system.

28. **Tracy Rice** asked a question regarding sediment transport rates. **Jarrett** responded that the net transport is about 270,000 cy/yr to the west but transport along the west end of Emerald Isle may presently be in balance as evidenced by the stable shoreline. With the redistribution of the ebb shoal material off the west end of Emerald Isle, net sediment transport along the west end of Emerald Isle will gradually increase from near zero to around 270,000 cy/year. As a result, removal of the 565,000 cy of material from the beach will take around 4 years. This combined with the 2-year adjustment period for the ebb tide delta material results in a total adjustment period of 6 years.

29. **Mickey** addressed questions concerning the impact area. The permit area will include 5.5 miles on the west end of Bogue Banks, 8,000 feet down Bear Island, landward to the AIWW and seaward for about 10,000 feet. **Mickey** said he would provide a definition of the final permit area to the PDT.

30. **Todd Miller** asked a question about the project cost and if weather would have an impact. **Jarrett** said cost estimates carry a 15% contingency for weather and other unforeseen problems that could affect the cost of the project. However, based on the expected production rate of the dredge, the actual construction time should be less than 60 days. The Shallotte Inlet project only required 56 days to pump 1.8 million cubic yards to Ocean Isle.

31. **Jarrett** raised the issue concerning cost constraints for the project and asked if the PDT would be comfortable if the final channel design was determined by the costs and the funds available from Emerald Isle to accomplish the task. The final channel selected, however, must still meet all of the channel stability criteria.

32. **Ed Murphrey** asked if the State's dredge (referring to the DOT dredge) could be used to construct the dike or if a second dredge could be used for the dike construction.

**Jarrett** indicated that the dredge would have to be able to meet the production requirements for dike construction and the State's dredge would probably not be able to meet this requirement. As far as using a second, smaller dredge to construct the dike, it too would have to meet the production requirements and result in some overall cost savings for the project. **Jarrett** indicated he would evaluate this option.

33. **David Rabon**, FWS, provided a summary of the requirements of the Endangered Species Act. The COE is the permitting agency for this project and must consult with the FWS on impacts of Federal listed species. He has agreed to conduct informal consultations, which provides a higher degree of flexibility to discuss project impacts and conservation measures. Most of the discussions will be between the FWS and the COE, however, the applicant (Emerald Isle) may be included in some of these discussions. First step in the informal process is the preparation of a Biological Assessment (BA) that list all impacted species, discusses the potential impacts of the project on these species, and list conservation measures that would minimize the potential impacts. This must be done on a species by species basis. FWS has reviewed a draft BA and has provided comments and suggestions for improving the BA. The COE will make a determination of the type of impact expected, i.e., "may affect" or "no effect" impact. If COE determines that there could be an effect and the FWS agrees, this would trigger the formal consultation process leading to the preparation of a Biological Opinion (BO). The BO is FWS's assessment of whether or not a Federal listed species will be placed in jeopardy by the project. If FWS has to prepare a BO, the project could still go forward providing FWS determines the project will not jeopardize the species. The BO could authorize incidental takes providing the COE follows the guidance provided in the BO.

34. **David** pointed out that we are still in the informal consultation stage and stressed that the BA must be complete in its description of species impacts and the kinds of conservation measures that will be taken. The requirement for a BO will be determined at the time the permit is formally requested. If a BO is required, total preparation time could be 135 days, which includes 45 days for FWS to prepare the BO. Time could be shorter or longer if changes come up. Rather than having to continually modify the BO, its best to stay in the informal process and produce a BA that meets all of the requirements. **David** stressed that the BA must be clear on the impacts and provide details of the proposed conservation measures for each species.

35. The BA will need to cover both parts of the project, i.e., channel relocation and beach nourishment. **Mickey** indicated that the requirements for the beach nourishment phase will probably be similar to the requirements for the existing Bogue Banks nourishment project but that some additional conditions could be added.

36. The discussion turned to possible conservation measures that the Town of Emerald Isle would be willing to consider. These measures included restricting vehicular access to the spit area, control of pedestrian traffic during certain times of the year, and/or establishment of the spit as a conservation area. The Town has apparently enacted some restrictions on future development in the area. The question of ownership of the spit and

newly created land, either directly or passively as a result of the project. The Town indicated that it had taken on this responsibility and will continue to pursue it.

37. With regard to the BA, CPE will revise in accordance with FWS comments and resubmit to the COE. **David** stated to be sure to include an assessment of direct and indirect impacts. **Mickey** responded that the permit area is different from the scope or project area and that direct and indirect impacts within the permit area will be included in the BA. A question was raised about the impacts of the current side cast dredging. **David** said that analysis of impacts of the project is based on existing conditions; therefore, the baseline should include impacts of the dredging operation.

38. Following lunch, **Erin Haight** discussed the monitoring plans and described the difficulty locating a firm with the proper marine insurance. A contract has now been worked out with CZR and the first bird monitoring will occur next week (week of 24 February). Normal bird and salt marsh monitoring will begin in March and will continue until construction. The benthic and salt marsh monitoring plans have been revised in accordance with comments from **Larry Eaton**. Modifications include moving the salt marsh stations closer to the edge of the marsh in order to measure sediment deposition, establishing a control point south of Island 2, and sample east and west of the proposed channel. Three diversity indexes will be determined and have added a sensitivity index in accordance with **Larry's** suggestions. **Erin** indicated that **Sue Cameron** has made additional comments but she had not received them. **Mickey** said he would forward comments to **Erin**.

39. The discussion turned to details of the bird-monitoring program including sampling times, sampling during high and/or low water, weekend days versus weekdays, and the need to include Bear Island. The schedule for bird monitoring includes once a month for December through February then every 10 days between March 1 and April 30 and every two weeks from May 1 to November 30. **Erin** requested some flexibility for the 10-day requirement given uncertainties with weather and tide conditions. **Erin** mentioned that the monitoring will extend 3 years post-construction. Based on recommendation of the PDT, the bird monitoring will be expanded to include the eastern 3,000 feet of Bear Island as well as the other areas included in the original plan. **Erin** mentioned that the inclusion of Bear Island could extend the monitoring time to two days rather than one and this would have an impact on the cost of monitoring.

40. **Ron Sechler** discussed the need to address essential fish habitat (EFH) including SAV's. He suggested several sources of information that could be accessed, primarily aerial photographs that could be used to evaluate SAV's. He also mentioned that the characteristics of the fishery resources will have to be identified and will need to look at the impacts of the project on the complete life cycle of the federal species. This will include the impact of the project on larval fish movement. The EFH could be included as a section in the EIS but would have to be essentially a stand-alone document that covers all of the issues. With regard to the timeframe of the EFH document, it would be done within the context of the EIS. A draft of the EFH document should be developed for review by NMFS.

41. **Mike Marshall** talked about near shore spawners and crabs and direct impacts revolve around the timing of the project. Clams are located back in the sound around the marsh islands. Impacts on the shellfish habitat could possibly be addressed by looking at the SAV's.

42. A discussion followed about the existing beach nourishment project, which allows beach disposal between November 16 and March 31. Also, the existing permit expires in December 2004 and the question was asked if it would be difficult to extend the permit. **Mickey** pointed out that a separate permit would be required for the inlet project including disposal of the inlet material on the beach. The new permit will likely have the same conditions on beach nourishment as the existing permit. **Jarrett** suggested that the permit should be extended anyway as a backup for the Town of Emerald Isle in the event the permit for the channel relocation is denied. **Mickey** agreed that extension of the existing permit would be a good idea. **Todd Miller** asked a question concerning the quality of the inlet material to which **Mickey** indicated that the quality was better than that coming from offshore and that the permit for the inlet material would probably only include some minor changes. **Mickey** indicated that we have not discussed beach impacts to date.

43. **Rudi Rudolph** suggested using aerial photos to identify different habitats. **Jarrett** said that would be possible providing an agreement could be reaches as to what constituted a habitat based on interpretations of aerial photos. That is, if everyone agreed that submerged-shallow areas, existing marsh areas, and subaerial spits, are identifiable habitats, these could be measured from a photo to establish baseline conditions. Following project construction, repeat aerials could be evaluated for the same habitats to determine changes in the physical makeup of the area. Based on these observed changes in habitat, perhaps some mitigative responses could be developed. For example, if the project causes a loss of marsh habitat, new marsh could be constructed.

44. **Todd Miller** requested information on project costs and benefits. An analysis of the without project condition will be provided prior to the next meeting along with some preliminary cost estimates for the various channel alternatives. Also, revised monitoring plans and the revised BA will be provided prior to the next meeting.

45. **Mickey** indicated that the next meeting of the PDT will not be on March 12 as originally scheduled. He plans to hold the next meeting sometime in late March or possibly the around the first of April. **Mickey** will notify the PDT when a date is set.

List of Participants

March 19, 2003 Bogue Inlet PDT Meeting

| Name | Representing | Phone Number |
|---|---|---|
| Tom Jarrett | CPE-NC | 910-392-0453 |
| Mike Marshall | NC DMF | 252-726-7021 |
| Tracy Rice | USFWS | 919-856-4520 ext 12 |
| Todd Miller | NC Coastal Federation | 252-393-8185 |
| John Fussell | | 252-240-1046 |
| Glenn McIntosh | USACE | 910-251-4621 |
| Mickey Sugg | USACE | 910-251-4811 |
| John Wells | UNC-CH | 252-726-6841 |
| Brian Strong | NC State Parks | 919-715-8711 |
| Charles R. Vincent | Bogue Banks Beach Preservation | 252-354-2501 |
| Art Schools | Mayor Emerald Isle | 252-354-3424 |
| Frank Rush | Town Manager Emerald Isle | 252-354-3424 |
| Nicole Mehnovets | NC Wildlife Resources Comm. | 252-247-9453 |
| Greg “Rudi” Rudolph | Carteret County | 252-393-2663 |
| Ron Sechler | NMFS-HCD | 252-728-5090 |
| Susan Cameron | NCWRC | 910-325-3602 |
| Matthew Godfrey | NCDMF | 252-726-7021 |
| Tere Barrett | NCDCM | 252-726-7021 |
| David Rabon | USFWS | 919-856-4520 ext 16 |
| David Allen | NCWRC | 252-448-1546 |
| Ed Murphrey | Pointe Association | 252-746-3784 |
| Erin Haight | CPE | 561-391-8102 |
| Bill Cleary | UNCW | 910-962-2420 |
| Dorothy “Doje” Masks | Town Commissioner | 252-354-3740 |
| Dick Eckhardt | Town Commissioner | 252-354-2826 |

**Minutes of June 11, 2003 PDT Meeting on Bogue Inlet**

1. The first half of the meeting included a boat trip through the inlet including Eastern Channel and portions of the AIWW behind Bogue Inlet.

2. The formal meeting of the PDT was held during the afternoon in the Cedar Point Town Hall. **Mickey Sugg** laid out the agenda for the meeting that included a detailed presentation of the upcoming surveys and mapping of the resources in the area and a discussion of the EIS/project schedule. A list of attendees is at the end of these minutes.

3. The EIS schedule was distributed and discussed. **Tom Jarrett** emphasized key dates on the schedule and the critical nature of the review times allocated for each phase of the EIS process. The preliminary draft of the EIS will be provided to the PDT on 22 August. A PDT meeting is scheduled for 10 September, or approximately midway during the review period of the preliminary draft of the EIS. Comments on the preliminary draft should be submitted by 20 September. **Mickey** indicated that comments could be submitted directly to him via email.

4. The revised Biological Assessment was submitted to the Corps on 6 July, slightly ahead of schedule **(the Corps submitted the BA to the Fish and Wildlife Service and the National Marine Fisheries Service on 24 July)**. The Essential Fish Habitat Analysis is scheduled to be submitted on 23 June **(Note: EFH analysis was submitted to Corps on –July and sent to NMF, DCM, and FWS on 24 July)**.

5. The meeting focused primarily on the new resource mapping effort that was formulated following the last PDT meeting. **Craig Krumpel**, CPE, discussed the plan in some detail. The plan includes digital mapping of the permit and project areas using high-resolution aerial photographs and ground truth to confirm interpretations made from the aerial photos. **Todd Miller** raised a question regarding the coverage area, particularly the west channel. A discussion followed that indicated that the permit area was based on modeling and geomorphic studies. **Craig** pointed out that data will be collected in all areas but that the data for the project area will not be as extensive as the permit area. **Tere Barrett** pointed out that additional coverage could be required once she has had time to review the data for the permit area.

6. At the time of the PDT meeting, the aerial photos had not been taken due to weather, tides, and problems obtaining permission from the Marine Corps to fly over restricted air space **(Note that the aerial photos were obtained on 30 June)**.

7. **Craig** explained that the topo mapping of the adjacent shorelines and the hydro survey of the inlet, which are being done by **Chris Freeman**, will go into GIS system. The accuracy of the surveys will be within 4-5 cm. The mapping will provide a good baseline data set. The survey will include representative cross-sections of the marsh areas and will cover Island 2.

8. **Mickey** asked if the mapping will include ground truth to which **Craig** responded that ground truth will be obtained in the permit area. Ground truth will be required in areas where the photo clarity is not sufficient to make accurate interpretations. This will primarily be in suspected SAV areas. May require some grab samples along the channel boundaries and in fringe areas.

9. There was some discussion on the significance of impacts and how this would be determined. **Mickey** indicated that significance of the impact on a particular resource would depend on the abundance of the resource within the project area. **Mickey** said that the degree of impact on a particular resource should be made part of the permit. **Tere** said that short term impact would be relatively easy to identify, however, impacts that occur over an extended period of time would be difficult to associate with the channel relocation project versus natural changes. **Tom Jarrett** said that most of the physical changes within the inlet associated with the new channel will probably occur within the first 6 months. This does not include the expected adjustments in the adjacent shorelines or the development of the sand spit off the west end of Emerald Isle which will likely take years. **Craig** said that aerial photos of the project area will be obtained at least 2 times and possible 3 times post-construction for comparison with the base conditions determined from the June 30 photos.

10. A discussion followed on the status of mapping shellfish. **Tere** contacted **Trish Murphey** to see if she was intending to send any additional data. Trish indicated that she was not aware of any additional requirements. The State shellfish data only identified habitat types that are likely to support shellfish and does not include actual shellfish counts.

11. There was some additional discussion on the significance of project related impacts. In general, significance will be based on the cumulative impacts on all resources not necessarily on impacts to individual resources. The EIS should include some prediction of impacts and include mitigation plans that would activate in the event anticipated impacts are exceeded.

12. **Todd Miller** inquired about the economic analysis. **Mickey** said the economic analysis was on the CD containing the engineering and geological analysis handed out at the previous PDT meeting and that the Corps economists were looking it over. Todd also asked about the ownership issue. **Mickey** said that the Town is looking into that issue.

13. **Noelle Lutheran** mentioned the 401 process needs to be included in the schedule. **Tom** said that the previous versions of the project schedule included the 401 process but was not included in the latest versions since it is part of the overall EIS process. **Craig** assured that all of the proper procedures for 401 will be followed.

14. The next meeting of the PDT is scheduled for 10 September.

| Name | Representing | Phone Number |
|---|---|---|
| Mary Helen Casey | Lands End | 252-354-2925 |
| Ed Murphy | Pointe Association | 252-746-3784 |
| Tere Barrett | NCDCM | 252-726-7021 |
| Tom Jarrett | CPE-NC | 910-392-0453 |
| Todd Miller | NC Coastal Federation | 252-393-8185 |
| Craig Kruempel | CPE | 561-391-8102 |
| Erin Haight | CPE | 561-391-8102 |
| John Fussell | | 252-240-1046 |
| Mickey Sugg | USACE | 910-251-4811 |
| Brian Strong | NC State Parks | 919-715-8711 |
| Charles R. Vincent | Bogue Banks Beach Preservation | 252-354-2501 |
| Art Schools | Mayor Emerald Isle | 252-354-3424 |
| Frank Rush | Town Manager Emerald Isle | 252-354-3424 |
| Jane M. Koroly | Cedar Point | |
| John Ellis | USFWS | 919-856-4520 |
| Sue Cameron | NCWRC | 910-325-3602 |
| Greg “Rudi” Rudolph | Carteret County | 252-393-2663 |
| Ron Sechler | NMFS-HCD | 252-728-5090 |
| Noelle M. Lutheran | NC DWQ | 910-395-3900 |
| Harry Simmons (boat trip only) | NCSBPA | 910-200-7867 |

# Minutes of September 10, 2003 Meeting of the
## Bogue Inlet Project Delivery Team

1. **Mickey Sugg** went over the agenda which included:

Status of the EIS
EIS Schedule
EIS Organization (Table of Contents)
Erosion Rates
Habitat Mapping
Direct and Indirect Impact Analysis (Table)
Rating System for Direct and Indirect Impacts
Mitigation and Conservation Measures

2. A list of attendees is attached at the end of these minutes.

3. **Mickey** explained that he schedules the PDT meetings based on information that has been developed since the last PDT meeting, therefore, he does not have a set schedule for the meetings.

4. The Corps received a draft copy of the preliminary Draft EIS around August 22. Based on a review of that document, the Corps determined that significant changes are needed to comply with a new format. The contractor (CPE) is making the necessary changes and will resubmit the preliminary DEIS on 19 September. Once the Corps reviews the revised document, it will be sent to the PDT on CD's in Adobe format.

5. The revisions required for the preliminary DEIS resulted in some changes in the EIS schedule (copies of the revised schedule were provided to the PDT). **Mickey** recommended a 30-day review period for the preliminary DEIS rather than 45 days as shown on the schedule. The next PDT was also adjusted to be near the end of the 30-day review period. The new date for the next PDT meeting will be on October 15, which will be 5 days before the end of the PDT review period. ***(A revised schedule based on the 30-day review period is attached to these minutes)***.

6. **Mayor School** emphasized the need to adhere to the new schedule. He introduced **Tom Campbell**, President of CPE, and indicated that CPE is doing all it can to meet the schedule. In that regard, **Tom Jarrett** pointed out that face-to-face meetings are planned with the Corps and the State following each document review period. Three such meetings are now on the schedule and will follow the review of the preliminary DEIS by the PDT, review of the DEIS, and Final EIS (FEIS). **Craig Kruempel** encouraged the PDT to provide its comments as soon as possible, preferable prior to the end of the review period, so that all of the issues and comments can be incorporated into the DEIS.

7. In response to a question by **Ed Murphrey** regarding the status of items listed on the schedule, **Craig** said the revised Essential Fish Habitat will be going out by September 19 and the Biological Assessment is presently being reviewed by the Fish & Wildlife

Service. A Cumulative Effects Assessment is also being revised in accordance with Corps comments. Information contained in these documents will be incorporated into the DEIS. **Mickey** pointed out that some items may not be complete in the preliminary draft and that all consultations have not been completed at this time.

8. **Mickey** discussed the organization of the EIS indicating that it is basically a disclosure document. The EIS will be arranged so that all alternatives are presented in an unbiased manner with evaluation made of the direct and indirect impacts of each "reasonable" alternative provided in the document. He indicated that by the time the reader reaches the end of the document, the preferred alternative should be obvious.

9. **Mickey** reviewed the Table of Contents (outline) for the EIS in some detail. Alternative D shown in the Table of Contents (TOC) is not an alternative and will be deleted from the EIS. Also, alternative E (Suspension of Corps of Engineers Channel Maintenance), Alternative H (Hardened Shoreline Alternative), and Alternative I (Inlet Sand Management) are not reasonable alternatives and will be eliminated from further consideration. The five remaining alternatives will be covered and evaluated in the EIS. Chapter 4 of the EIS will define the Affected Environment (resources) and the order of these resources will be followed in other chapters of the EIS. In addition to the resources listed in the TOS, **Mickey** added the following resources: Land Use; Hydrodynamics (tidal flow); Infrastructure; Littoral Process. Chapter 5 will evaluate the environmental consequences of each alternative with the impacts on each resource evaluated for each of the 5 alternatives.

10. **Todd Miller** asked if alternatives for Hammocks Beach State Park would be included. **Justin McCorcle** said the EIS is structured to consider alternatives for responding to erosion of the Emerald Isle inlet shoreline. The impacts of each alternative on Hammocks Beach State Park and other resources will be evaluated.

11. **Todd Miller's** concern over the shoreline positions that are predicted to occur following the channel relocation were discussed in some detail. One method of addressing the concerns through the establishment of erosion thresholds was discussed. The erosion threshold suggested for Emerald Isle would be a maximum landward shoreline position while the erosion threshold on Bear Island would be based on historic shoreline change rates. However, **Todd's** major concern was with the possible maximum shoreline recession on Emerald Isle and wanted to include shoreline positions on Emerald Isle dating prior to 1973. **Todd** noted that the east end of Bear Island eroded over 800 feet and that a similar response on Emerald Isle could cause considerable problems. **Tom Jarrett** said that the maximum retreat on Bear was a function of the seaward protrusion of the island associated with the ebb tide delta and that the seaward protrusion on the west end of Emerald Isle is not that large. **Charles Vincent** mentioned that some of the accretion on the west end of Emerald Isle was due to the disposal of dredged material by the Corps and therefore, all of the material that would be eroded is not there naturally. **Tom Campbell** said what **Todd** was looking for is some type of disclosure to indicate the worst case shoreline position that could reasonably be expected as a result of the project. Accordingly, CPE agreed to review all previous shoreline positions and provide

plots of the historic shorelines and an assessment of the maximum and minimum shoreline positions contained in the historic record. The minimum shoreline position at each transect measured during the 1943 to 2001 period (i.e., most landward shoreline position for each transect in the historic record) would be presented as a reasonable estimate of the maximum shoreline retreat that could accompany the channel relocation. ***(Note: this same information will be provided for Bear Island)***.

12. **Craig Kruempel** introduced **Chris Freeman** who is conducting the hydrographic and topographic surveys of the inlet complex and adjacent islands. **Chris** presented some of the three-dimensional plots of his data. All of the survey data along with digital photographs of points within the back barrier will be incorporated into a GIS. All of the topographic work has been completed and **Chris** will be using an instrumented jet ski system to complete the hydrographic work in the back barrier channels. The survey work will be completed this week weather permitting.

13. **Craig** gave a demonstration of the type of information that will be included in the GIS for the back barrier points. The information will include: location of the data point, survey information (i.e., elevation), and a digital photo. For the ocean shorelines, the GIS will include the vegetation line, profile lines, survey lines parallel to the shoreline, and the location of various shorelines (mean high water, mean sea level, & mean low water).

14. **Mickey** mentioned the need to obtain a 401 water quality certification from the State. **Noelle Lutheran** indicated that a Water Quality Variance may be required, but the 401 Certification may be able to cover the need for a variance if the project exceeds the 25 NTU limit. **Noelle** indicated that the variance process can be rather lengthy. **Doug Huggett** indicated that a CAMA permit cannot be issued until the water quality certification is complete. CPE will immediately begin discussion with the NC Division of Water Quality to initiate the WQ certification process.

15. **Craig Kruempel** passed out maps delineating various resources within the Permit Area and the surface area of the resources which were determined from the digital aerial photos obtained on June 30, 2003. The information interpreted from the aerial photos is being confirmed by ground truth surveys conducted by CPE's subcontractor CZR. At the request of **Tere Barrett**, **Mickey** reviewed the definitions of the Permit Area and Project Impact Zone. **Craig** mentioned that a shellfish survey will be conducted this week involving a representative of the NC Division of Marine Fisheries and CZR. In response to a question by **Mickey**, **Craig** indicated that the resource map will be used to determine the physical impacts on the various resources for the 5 alternatives. The map will be used to determine direct and indirect impacts within the Permit Area. Indirect impacts will include the filling of the existing channel, shoreline adjustments, spit growth, etc. included in previous projections. Timing of these impacts will be included. The maps along with the hydrographic and topographic surveys and ground truth will provide the base conditions on which to measure future changes in these resources following project construction. **Craig** said post-project aerials and surveys will be obtained 1.5 years after construction. The need for future monitoring will depend on the results of the first survey. **Todd Miller** expressed some concern that there would not be any information on

SAV's outside the Permit Area. **Craig** indicated that there will be information outside the Permit Area but not to the same degree as inside the Permit Area. For example, some ground truth for SAV's will be obtained outside the Permit Area. **Craig** pointed out than an overlay of the SAV information developed form the June 30, 2003 aerials agrees well with the SAV information from the 1992 survey. This seems to indicate that the SAV's are rather persistent. The combined information from the latest photos and the 1992 survey provide good base information on SAV's. **Ron Sechler** indicated that he was comfortable with the monitoring plan.

16. **Ron Sechler** introduced **Don Field** of the Beaufort Laboratory who is an expert in photo mapping of SAV's. **Don** noted the problems CPE had obtaining permission to over fly the Marine Corps' restricted airspace which only provided a 3-hour window on June 30. As a result, the photos were not taken at the best sun angle and tide conditions, however, **Don** believed that the photos were generally good and could, along with ground truth, be used to evaluate the presence of SAV's in the area. **Ron Sechler** said that there were very few to no SAV's in the Permit Area but SAV's do exist in the Project Impact Area.

17. **Todd Miller** again questioned the exclusion of the "horseshoe" area around Huggins and Dudley Islands from the Permit Area. The Permit Area was based on the results of the numerical model and predictions of sediment distribution during and following the channel relocation. **Jarrett** pointed out that most of the post-construction adjustments will involve the transport of sediment along the channel bottom and is not expected to move outside the boundaries of the main channels (Eastern and Western Channels). Sediment plume predictions during project construction did not extend any appreciable distance into Eastern or Western Channels. Post-project monitoring will include resurveys of the back barrier transect lines to determine if any sedimentation has occurred in these areas.

18. Most of the afternoon session was devoted to the presentation of the project direct and indirect impacts in tabular form. The discussion moved back and forth as to whether the table should be organized by habitat type (marsh, subtidal, intertidal, etc.) or by resource (birds, fish, vegetation, etc.). The discussion included ways to represent direct, indirect, short-term, and long-term impacts within the Permit Area. **Rudi Rudolph** suggested that the table should be organized in the same manner as the other Chapters of the EIS (i.e., Chapters 4 and 5) which are organized around the various resources. Eventually, the PDT agreed to this format with some expansion on the species within each resource (e.g., birds to include colonial, skimmers, and waders). Also, the table will only include the relevant resources. Rather than try an summarize the write-up of the impacts contained in Chapter 5 with a single word or phrase, the table will include short sentences that will clearly indicate if the impact is direct, indirect, short-term, or long-term. With regard to the definition of short-term or long-term impacts, this will vary depending on the impact and will be defined separately in the detailed narrative provided in Chapter 5. **Todd Miller** pointed out that short-term impacts are not by definition insignificant. The PDT agreed to include two summary tables, one listing the physical impacts of each alternative on the various habitats and a second summarizing the impacts described in Chapter 5.

19. **Ron** indicated that he had reviewed the EFH analysis and had made specific suggestions to only include the federally listed species (note: the draft included State species). **Craig** said that the revised EFH analysis will be going out on September 19 and includes the changes recommended by **Ron**.

20. With respect to biological monitoring along the beach, **Mickey** suggested that the requirement to monitor benthic organisms on the beach could possible be eliminated given the quality of the sand that will be obtained from the inlet compared with the material obtained from the offshore borrow areas. **Doug Huggett** recommended keeping the requirement in the permit but allow some assessment of the need to continue the monitoring after some verification period.

21. **Mickey** initiated a discussion of possible mitigation and conservation measures. He mentioned the possibility of Emerald Isle purchasing some undeveloped lands as conservation areas. **Sue Cameron** indicated that the measures should include a bird management plan given the improved public access to the inlet shoreline that will accompany the project. **Mickey** said that the Town has initiated some efforts to control public and vehicular access during critical times of the year. **Todd Miller** questioned who would supervise the bird management plan. Sue also expressed concern over Island 2. **Mickey** said that the island is presently undergoing rapid changes now and it may be difficult to assign project culpability.

22. The Town is still looking into the ownership issue regarding new lands that will be created as an indirect result of this project. The Town is also considering the establishment of conservation easements. **Todd Miller** was concerned with the new land being in private ownership and suggested giving the new land to Hammocks Beach State Park. The Town is somewhat skeptical about this. **Justin** indicated that conservation easements will be addressed.

23. Procedural matters associated with the processing of the EIS and application for the CAMA permit were discussed. The State cannot officially consider a request for a permit until the EIS process is complete and the Corps files its Record of Decision approving the project. Once the Record of Decision is completed, the State may require a minimum of 75 days and a maximum of 150 days to process the CAMA permit request. Also, the issuance of a CAMA permit will be contingent on the completion of the water quality certification. **Ted Tyndall** said that given the level of involvement of the State resource agencies in the PDT process the CAMA permit process should be in good shape. Time will be required to write the actual permit.

24. **Justin** said the Corps will have to process the 404(1)(b) guidelines, however, the information that will be included in the EIS will probably cover all of these requirements.

25. The next meeting of the PDT will be on October 15 during the PDT review period of the preliminary DEIS. All PDT members are encouraged to perform timely reviews of the document and be ready to offer specific comments and recommendations at that

meeting. Written comments and recommendations should be provided to **Mickey** as close to October 20 as possible in order to obtain the maximum benefit from the face-to-face meeting between CPE, the Corps, and the State scheduled for October 21 and 22.

List of Participants

September 10, 2003 Bogue Inlet PDT Meeting

| Name | Representing | Phone Number |
|---|---|---|
| Tom Jarrett | CPE-NC | 910-392-0453 |
| Erin Haight | CPE-FL | 561-391-8102 |
| Craig Kruempel | CPE-FL | 561-391-8102 |
| Tom Campbell | CPE-FL | 561-391-8102 |
| Mickey Sugg | USACE | 910-251-4811 |
| Charles R. Vincent | Bogue Banks Beach Preservation | 252-354-2501 |
| Tere Barrett | NCDCM | 252-808-2808 |
| Ted Tyndall | NCDCM | 252-808-2808 |
| Greg “Rudi” Rudolph | Carteret County | 252-393-2663 |
| Sean McElhone | NCDPR | 910-226-4881 |
| Ed Murphrey | Pointe Association | 252-746-3784 |
| David Allen | NCWRC | 252-448-1546 |
| Ron Sechler | NMFS-HCD | 252-728-5090 |
| John Wells | UNC-CH | 252-726-6841 |
| Susan Cameron | NCWRC | 910-325-3602 |
| Mary Helen Casey | Lands End | 252-354-2925 |
| Howard Hall | USFWS | 919-856-4520 |
| Matthew Godfrey | NCWRC | (252) 728-1528 |
| Mike Marshall | NCDMF | (252) 726-7021 |
| Art Schools | Mayor Emerald Isle | 252-354-3424 |
| Michelle Duval | Environmental Defense | 919-881-2601 |
| John Fussell | Local Citizen | 252-240-1046 |
| Harry Simmons | NCSBPA | 910-200-7867 |
| Todd Miller | NC Coastal Federation | 252-393-8185 |
| Doug Huggett | NCDCM | 919-733-2293 |
| Noelle M. Lutheran | NC DWQ | 910-395-3900 |
| Jane M. Koroly | Cedar Point | |

| | | |
|---|---|---|
| Justin McCorcle | USACE | 910-251-4699 |
| Lawrence Eaton | NCDWQ | |
| Don Field | NOAA-Beaufort | |
| Brian Strong | NC State Parks | 919-715-8711 |
| Chris Freeman | UNC-CH/Geodynamics | 252-422-3209 |